

What is claimed:

1. A clean air filter and delivery apparatus in combination for mounting on a plurality of grid openings of a suspended ceiling of an enclosed building area independent of any heating, ventilating and air conditioning apparatus therein, said apparatus comprising:

air return means mountable on a first grid opening of a suspended ceiling for receiving pre-filtered air flow therethrough,

air filter means mounted above any suspended ceiling and in fluid communication with said air return means,

blower means mounted above any suspended ceiling and positioned downstream of said air filter means in air tight fluid communication therewith for efficiently pulling air through said air filter means,

air supply means mountable downstream of said blower means on a second grid opening of a suspended ceiling remote from a first grid opening thereof for delivering filtered air flow therethrough, and

flexible duct means positioned above any suspended ceiling between said blower means and said air supply means for delivering air tight fluid flow therebetween.

2. The clean air filter and delivery apparatus as defined in claim 1 wherein said air filter means comprises,

a first filter cartridge having a frame including upper and lower surfaces and an elongate sheet of filter media extending substantially perpendicularly to and between said upper and lower surfaces.

3. The clean air filter and delivery apparatus as defined in claim 1 wherein said blower means comprises,

a single inlet backward curved centrifugal fan including a circular inlet and a circular outlet for air tight mating engagement with said flexible duct means.

4. The clean air filter and delivery apparatus as defined in claim 1 wherein said air filter means comprises,

a second filter cartridge having a frame and activated carbon particles retained thereon.

5. The clean air filter and delivery apparatus as defined in claim 1 wherein said air return means and said air filter means are combined in a single structure having a mesh grill defining the bottom thereof for vertical flow of air therethrough and through a first filter cartridge defining said air filter means.

6. The clean air filter and delivery apparatus as defined in claim 5 wherein said air filter means further includes a second filter cartridge having a frame and including activated carbon particles retained thereon.

7. The clean air filter and delivery apparatus as defined in claim 2 wherein said air filter means further includes,

a second filter cartridge having a frame and activated carbon particles retained thereon.

8. The clean air filter and delivery apparatus as defined in claim 1 further including, flexible duct means positioned above any suspended ceiling between said air filter means and said blower means for delivering air tight fluid flow therebetween.

9. The clean air filter and delivery apparatus as defined in claim 1 further including, flexible duct means positioned between said air filter means and said blower means above any suspended ceiling for air tight fluid flow therebetween.

10. The clean air filter and delivery apparatus as defined in claim 3 further including,

flexible duct means positioned between said air filter means and said blower means above any suspended ceiling for air tight fluid flow therebetween.

11. The clean air filter and delivery apparatus as defined in claim 1 wherein said air filter means comprises,

an air tight hollow box including a circular inlet and a circular outlet having a first filter cartridge therein, said filter cartridge having a frame including upper and lower surfaces and elongate frame members therebetween, and elongate sheet of filter media extending substantially perpendicularly to and between said upper and lower surfaces for filtering air flowing therethrough.

12. The clean air filter and delivery apparatus as defined in claim 11 further including, a second filter cartridge having a frame and activated carbon particles retained thereon.

13. A clean air filter and delivery apparatus in combination for mounting on a plurality of grid openings of a suspended ceiling of an enclosed building area independent of any heating, ventilating and air conditioning apparatus therein, said apparatus comprising:

an air return having a rectangular border for mounting on a first grid opening, said air return including a circular outlet for air tight connection with a flexible duct work,

an air filter cartridge in fluid communication with said air return, said filter cartridge including a frame including upper and lower surfaces and elongate frame members therebetween, an elongate sheet of filter media extending substantially perpendicularly to and between said upper and lower surfaces for filtering air flowing therethrough,

a single inlet backward curved centrifugal fan including a circular inlet and a circular outlet, said fan efficiently drawing air through said return and through said air filter cartridge

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and drawing filtered air through said centrifugal fan while pushing air through said air delivery supply,

a flexible ductwork positioned in air tight relation between said air return circular outlet and said circular inlet of said centrifugal fan,

an air delivery supply having a rectangular border for mounting on a second grid opening remote from a first grid opening and having a circular inlet thereon, and

a flexible ductwork positioned in air tight relation between said centrifugal fan outlet and said air delivery supply circular inlet.

14. The clean air filter and delivery apparatus as defined in claim 13 further including, a second filter cartridge therein, said second filter cartridge having a frame and activated carbon particles retained thereon, said first and second filter cartridges being positioned adjacent one another aligned for coaxial flow therethrough.

15. The clean air filter and delivery apparatus as defined in claim 13 further including, an air tight hollow box including a circular inlet on one side thereof and a circular outlet on an opposing side thereof for mounting said first filter cartridge therein for horizontal air flow therethrough, said hollow box being mountable above any suspended ceiling, and

flexible ductwork positioned in air tight relation between said circular outlet of said air return and said circular inlet of said hollow box, and all said flexible ductwork being mountable above any suspended ceiling.

16. The clean air filter and delivery apparatus as defined in claim 13 wherein, said air return includes a housing for mounting said air filter cartridge thereon, said housing including a mesh grill at the bottom thereof shaped to mount on a grid of a suspended

ceiling for intake of pre-filtered air therethrough, and a plurality of circular air outlets in spaced relation around the perimeter of said housing,

said apparatus further including,

a plurality of said single inlet backward curved centrifugal fans equal to the number of circular air outlets on said housing minus one, and

a plurality of flexible ductwork with one such ductwork leading in air-tight relation from each of said circular air outlets on said housing to a circular air inlet on a respective one of said single inlet backward curved centrifugal fans,

a plurality of air delivery supplies equal to the number of centrifugal fans minus one, each having a rectangular border for mounting on a grid opening and having a circular inlet thereon, and

a second plurality of flexible ductwork with one such ductwork leading in air tight relation between a circular outlet on a respective one of said centrifugal fans to a respective one of said circular inlets on one of said plurality of air delivery supplies.

17. A clean air filter and delivery apparatus in combination for suspended mounting from a ceiling of an enclosed building area independent of any heating, ventilating and air conditioning apparatus therein, said apparatus comprising:

an air return including a circular outlet for air tight connection with rigid spiral duct work,

an air filter cartridge in fluid communication with said air return, said filter cartridge including a frame including upper and lower surfaces and elongate frame members

therebetween, an elongate sheet of filter media extending substantially perpendicularly to and between said upper and lower surfaces for filtering air flowing therethrough,

a single inlet backward curved centrifugal fan including a circular inlet and a circular outlet, said fan efficiently drawing air through said return and through said air filter cartridge and drawing filtered air through said centrifugal fan while pushing air through said air delivery supply,

a rigid spiral ductwork positioned in air tight relation between said air return circular outlet and said circular inlet of said centrifugal fan,

an air delivery supply having a rectangular border for mounting on a second grid opening remote from a first grid opening and having a circular inlet thereon, and

a flexible ductwork positioned in air tight relation between said centrifugal fan outlet and said air delivery supply circular inlet.

18. A clean air filter and delivery apparatus including,

a box-like structure including a back wall including a circular inlet therethrough, a pair of opposed side walls extending from the ends of said back wall, a front wall extending from the ends of said side walls, a top wall enclosing the top edges of said back wall, said opposed side walls and said front wall, an improvement comprising:

said front wall including an opening and a door removably mounted over said opening, an inside surface of said opposing side walls each including filter mounting rails mounted therealong and terminating adjacent said front wall opening for slidably receiving filter panels therealong, and

a bottom air delivery wall selectably releaseably enclosing the bottom edges of said back wall, said opposing side walls and said front wall, said bottom air delivery wall including openings therethrough for movement of air in a pre-determined direction therethrough.

19. The clean air filter and delivery apparatus as defined in claim 18 wherein said openings in said bottom air delivery wall are adjustable.



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